Beverage Specific Regressions, California

Model 1[5]			1980 Midcal Policy Change				1982 Lewis-Westco Policy Change			
			Wine		Beer		Spirits		Beer	
	Mean	Standard Deviation	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
California Beer Consumption[1]	1.247	0.122	-		Dependent Variable		-		Dependent Variable	
California Wine Consumption[1]	0.617	0.113	Dependent Variable		-		-		-	
California Spirits Consumption[1]	0.987	0.292	-		-		Dependent Variable		-	
Trend	17.000	9.670	-0.002	0.002	0.002	0.009	-0.014*	0.003	-0.012	0.008
U.S. Beer Consumption[2]	1.278	0.070	-	-	1.180*	0.360	-	-	1.691*	0.357
U.S. Wine Consumption[2]	0.323	0.031	2.415*	0.174	-	-	-	-	-	-
U.S. Spirits Consumption[2]	0.866	0.193	-	-	-	-	1.242*	0.054	-	-
Beer Tax[3]	0.014	0.007	-	-	-1.851	1.464	-	-	-0.256	1.552
Wine Tax[3]	0.003	0.003	2.749	2.298	-	-	-	-	-	-
Spirits Tax[3]	0.049	0.020	-	-	-	-	-1.922*	0.581	-	-
Policy Indicator[4]			0.043**	0.020	0.077	0.123	-0.142*	0.042	-0.064	0.114
Policy * Trend			-0.008*	0.002	-0.009	0.011	0.009*	0.003	0.007	0.010
Constant			-0.060	0.055	-0.195	0.415	0.196	0.102	-0.777	0.416
Adjusted R^2 (goodness of fit)			0.984		0.954		0.999		0.954	
Number of Observations			33		33		33		33	

	Test Statistic	P-Value	Test Statistic	P-Value	Test Statistic	P-Value	Test Statistic	P-Value
Breusch-Pagan/Cook-Weisberg Test (detects heteroskedasticity)	0.84	0.358	0.00	0.964	1.94	0.164	0.00	0.979
Durbin-Watson Statistic (detects autocorrelation)	1.730		2.251		2.250		2.114	
F Test (tests whether the regression is statistically significant)	389.30	0.000	132.12	0.000	5956.89	0.000	133.13	0.000
F Test of Policy Variables (test whether the policy variables are jointly statistically significant; ndf = 2, ddf = 27)	9.91	0.001	0.61	0.551	6.09	0.007	0.71	0.499

	Gallons of Ethanol from Wine, per Capita (age 14+)	Gallons of Ethanol from Beer, per Capita (age 14+)	Gallons of Ethanol from Spirits, per Capita (age 14+)	Gallons of Ethanol from Beer, per Capita (age 14+)
Actual Consumption, California, 2002	0.489	1.074	0.635	1.074
Predicted Consumption, California, 2002	0.693	1.298	0.473	0.908
Difference, California, 2002	-0.204	-0.224	0.162	0.166

Beverage Specific Regressions, California

Model 3[5]			1980 Midcal Policy Change				1982 Lewis-Westco Policy Change			
			Wine		Beer		Spirits		Beer	
	Mean	Standard Deviation	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
California Beer Consumption[1]	1.247	0.122	-		Dependent Variable		-		Dependent Variable	
California Wine Consumption[1]	0.617	0.113	Dependent Variable		-		-		-	
California Spirits Consumption[1]	0.987	0.292	-		-		Dependent Variable		-	
Trend	17.000	9.670	0.002	0.001	-0.001	0.020	-0.011*	0.004	-0.023	0.013
U.S. Beer Consumption[2]	1.278	0.070	-	-	1.293	0.777	-	-	2.153*	0.561
U.S. Wine Consumption[2]	0.323	0.031	1.208*	0.289	-	-	-	-	-	-
U.S. Spirits Consumption[2]	0.866	0.193	-	-	-	-	1.483*	0.148	-	-
Beer Tax[3]	0.014	0.007	-	-	-1.920	1.549	-	-	-0.918	1.668
Wine Tax[3]	0.003	0.003	5.698*	1.836	-	-	-	-	-	-
Spirits Tax[3]	0.049	0.020	-	-	-	-	-1.830*	0.563	-	-
Policy Indicator[4]			-0.410*	0.098	0.247	1.036	0.164	0.182	0.843	0.857
Policy * Trend			-0.011*	0.002	-0.006	0.020	0.006	0.003	0.017	0.014
Policy * U.S. Beer Consumption			-	-	-0.145	0.875	-	-	-0.739	0.693
Policy * U.S. Wine Consumption			1.507*	0.322	-	-	-	-	-	-
Policy * U.S. Spirits Consumption			-	-	-	-	-0.263	0.152	-	-
Constant			0.289*	0.085	-0.319	0.860	-0.088	0.191	-1.279	0.627
Adjusted R^2 (goodness of fit)			0.991		0.952		0.999		0.954	
Number of Observations			33		33		33		33	

	Wine		Beer		Spirits		Beer	
	Test Statistic	P-Value	Test Statistic	P-Value	Test Statistic	P-Value	Test Statistic	P-Value
Breusch-Pagan/Cook-Weisberg Test (detects heteroskedasticity)	6.65	0.010	0.00	0.990	1.72	0.190	0.14	0.705
Durbin-Watson Statistic (detects autocorrelation)	2.060		2.267		2.381		2.285	
F Test (tests whether the regression is statistically significant)	579.82	0.000	106.14	0.000	5332.72	0.000	111.71	0.000
F Test of Policy Variables (test whether the policy variables are jointly statistically significant; ndf = 3, ddf = 26)	19.05	0.000	0.40	0.754	5.37	0.005	0.86	0.475

	Gallons of Ethanol from Wine, per Capita (age 14+)	Gallons of Ethanol from Beer, per Capita (age 14+)	Gallons of Ethanol from Spirits, per Capita (age 14+)	Gallons of Ethanol from Beer, per Capita (age 14+)
Actual Consumption, California, 2002	0.489	1.074	0.635	1.074
Predicted Consumption, California, 2002	0.782	1.217	0.436	0.585
Difference, California, 2002	-0.293	-0.143	0.199	0.489

Table Notes:
* Estimated coefficient is statistically significant at the 1% level, two-tailed test.
** Estimated coefficient is statistically significant at the 5% level, two-tailed test.

(1) California per capita (age 14+) consumption of ethanol by beverage is measured in gallons per year and is drawn from the National Institute on Alcohol Abuse and Alcoholism apparent consumption data. See Lakins, et al. (2004).

(2) U.S. per capita (age 14+) consumption of ethanol by beverage is measured in gallons per year and is drawn from the National Institute on Alcohol Abuse and Alcoholism apparent consumption data. See Lakins, et al. (2004).

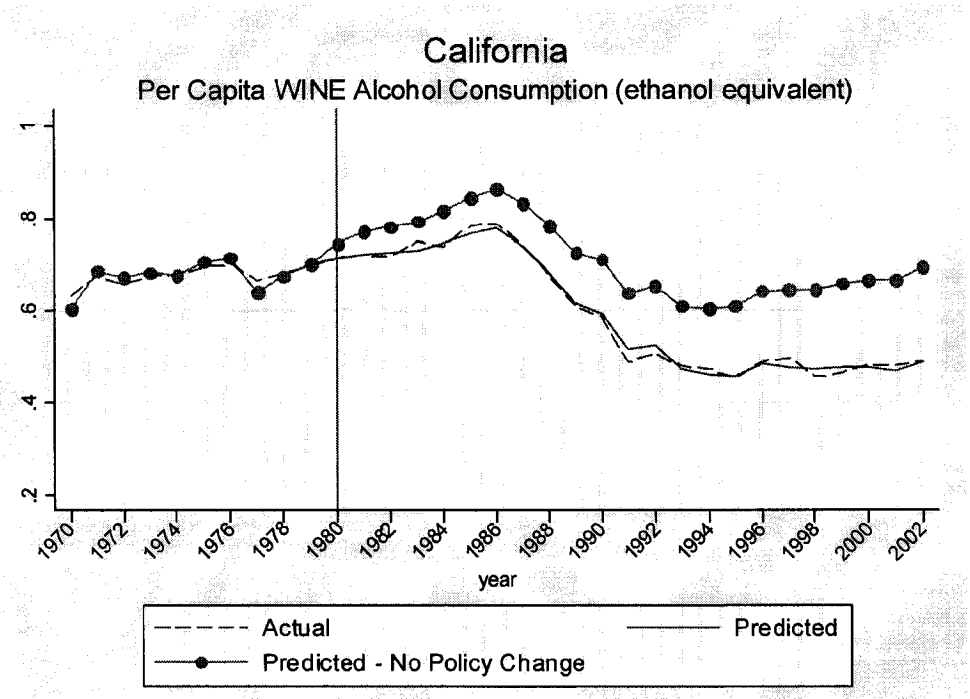
(3) Beverage specific alcohol taxes are measures of the real level of the California excise taxes on ethanol. California excise tax data were drawn from Table 27 in California State Board of Equalization (1999), and California State Board of Equalization (2004). The taxes are then deflated using non-seasonally adjusted Consumer Price Index data (U.S. city average, all items, base period: 1982-84 = 100) from the Bureau of Labor Statistics.

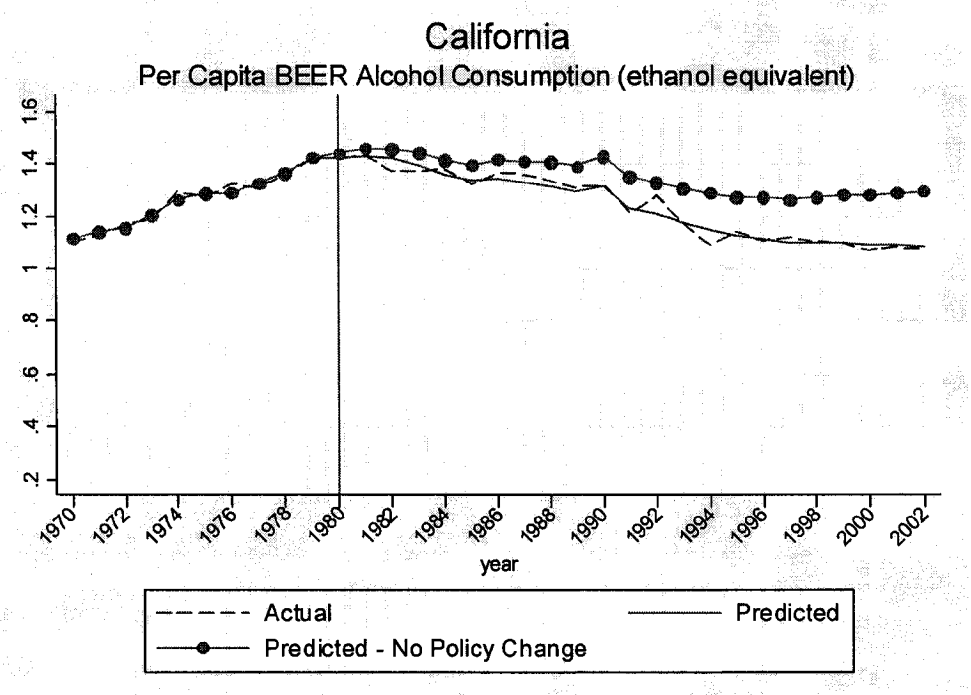
(4) The policy indicator variable for the 1980 policy change equals zero before the Supreme Court of the United States invalidated California's price posting and fair trade laws on wine on March 3, 1980 (California Retail Liquor Dealers Association v. Midcal Aluminum, Inc. (1980)). The policy indicator variable equals 10/12 in 1980, because the policy was in effect for ten months that year. The policy indicator variable equals one thereafter.

The policy indicator variable for the 1982 policy change equals zero before the Lewis-Westco decision which invalidated California's price posting laws on spirits on October 22, 1982 (Lewis-Westco & Company v. Alcoholic Beverage Control Appeals Board (1982)). The policy indicator variable equals 2/12 in 1982, because the policy was in effect for two months that year. The policy indicator variable equals one thereafter.

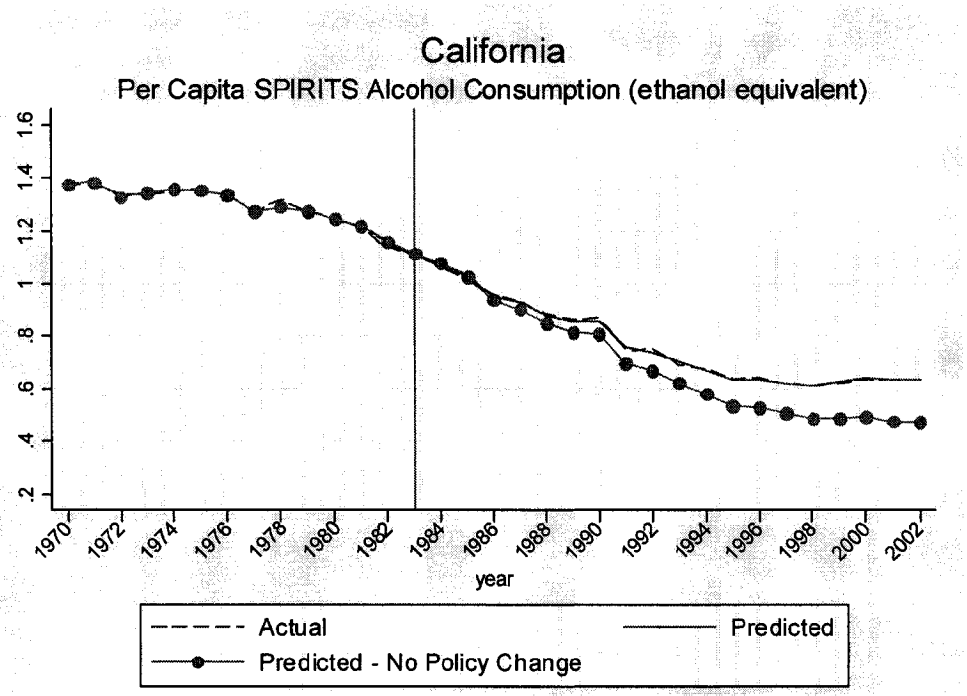
(5) Model 1 and 3 regressions are the same as Prof. Chaloupka's Model 1 and 3 regressions for Delaware and Nebraska. See Expert Report of Frank J. Chaloupka (2005) ¶44.

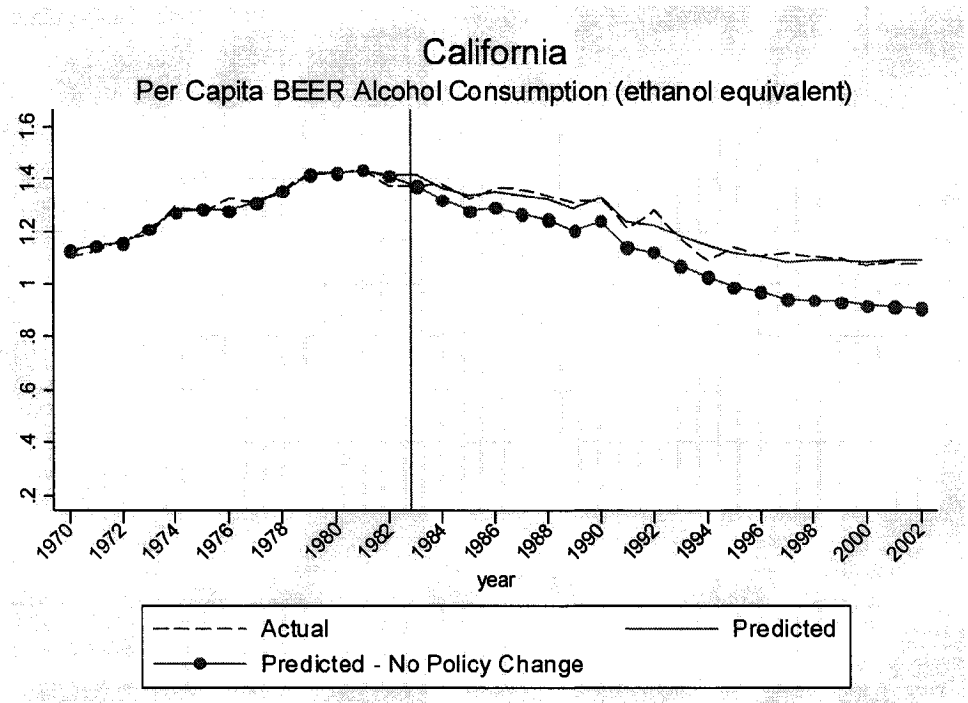
Model 1 Graphs – 1980 Policy Change



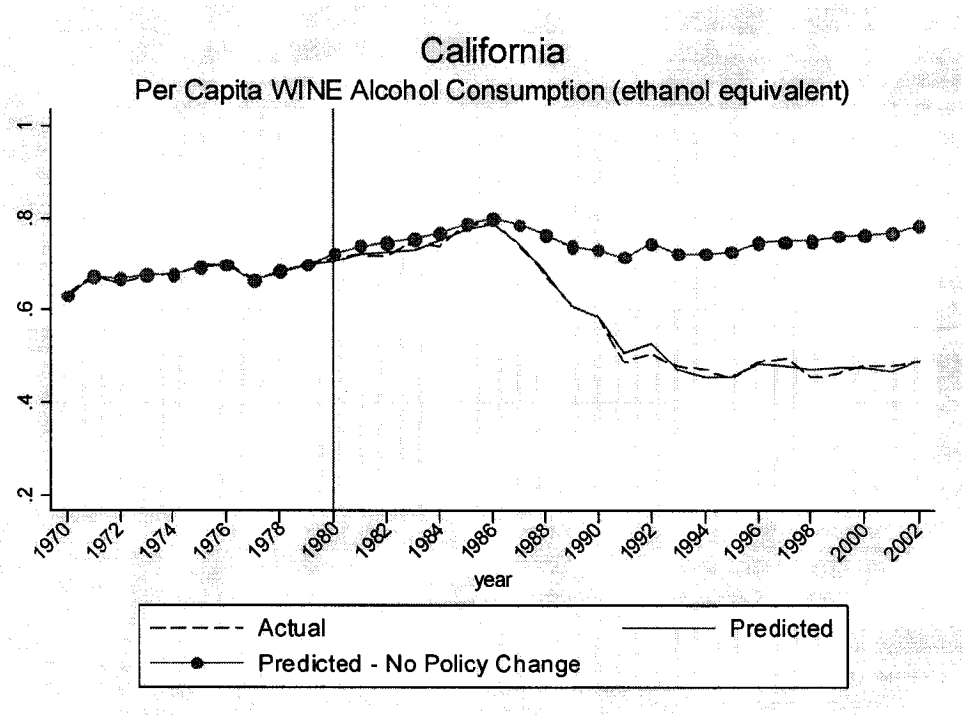


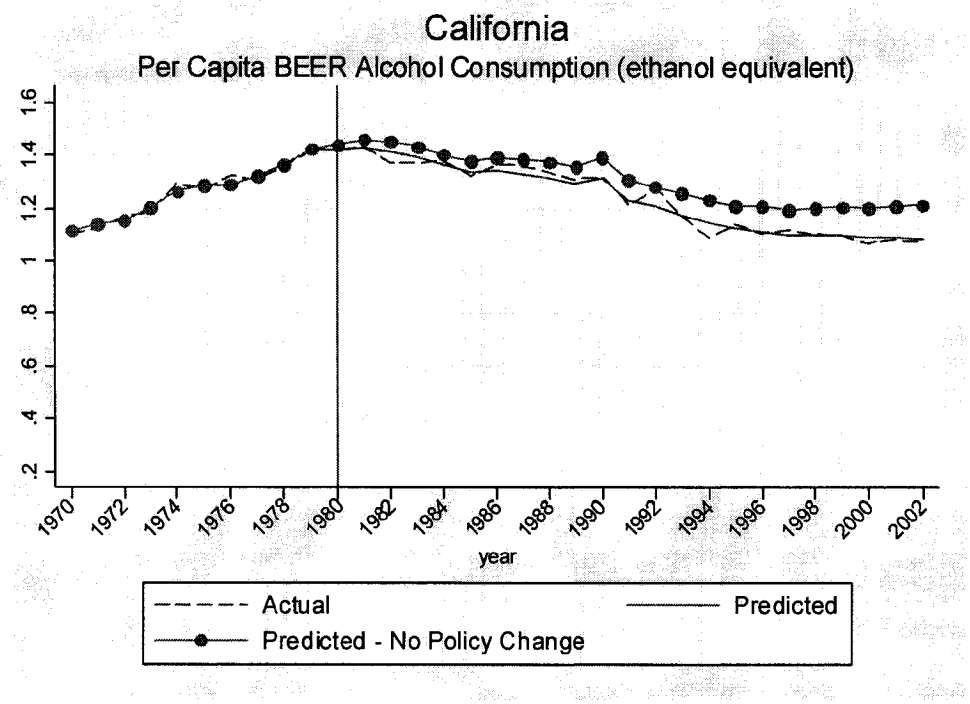
Model 1 Graphs – 1982 Policy Change



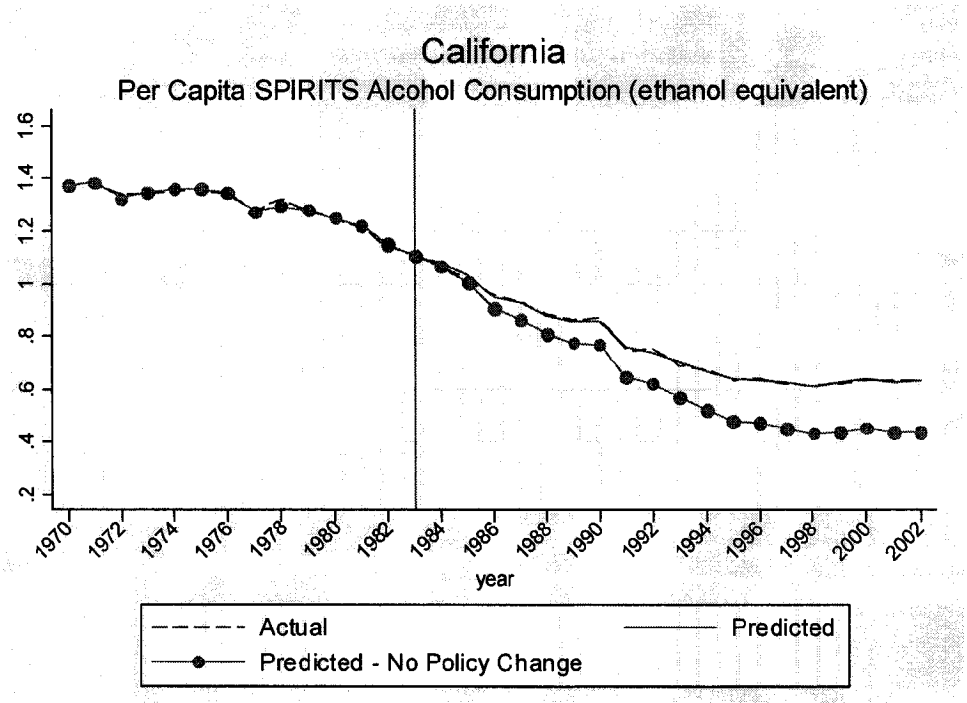


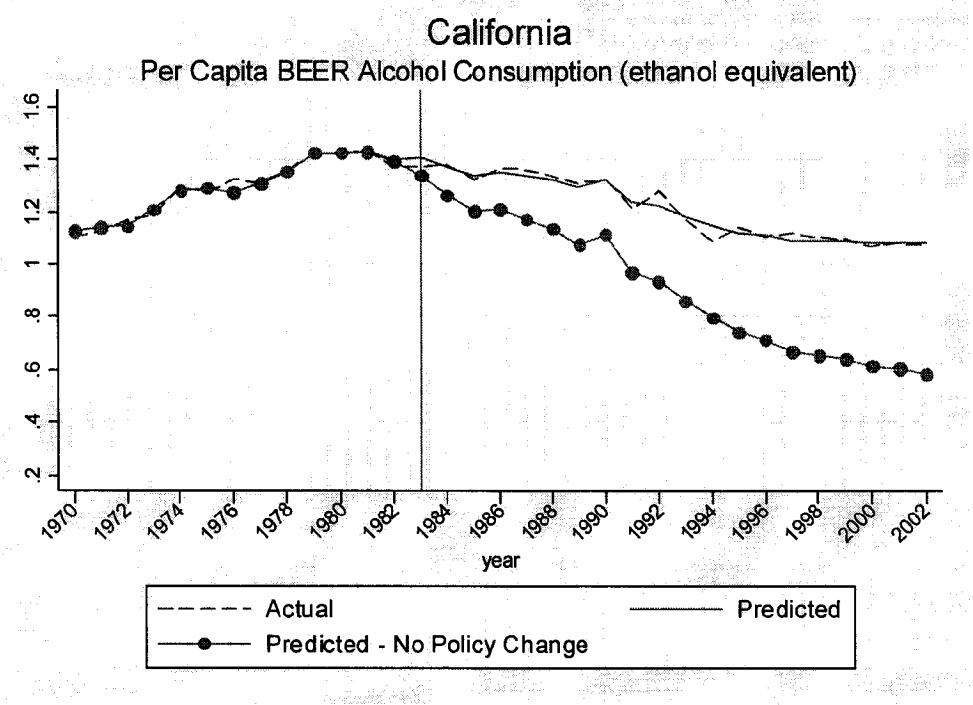
Model 3 Graphs – 1980 Policy Change





Model 3 Graphs – 1982 Policy Change





Graph Notes:

Graphs are based on estimates in Model 1 and 3 tables.

The vertical line in the 1980 policy change graphs is in 1980.

The vertical line in the 1982 policy change graphs is in 1983, as the policy was effective in 1982 for only two months.

California Data

year	beer_wtdtaxoz6	spirits_wtdtaxoz6	wine_wtdtaxoz6	beer_gal_eth_per_cap_146	spirits_gal_eth_per_cap_146	gal_eth_per_cap_146tota
1970	0.0178981	0.097982	0.0015609	1.1048	1.3693	3.1071
1971	0.0171468	0.0938692	0.0014954	1.1279	1.3834	3.1878
1972	0.0166135	0.0909498	0.0014489	1.1704	1.3337	3.1643
1973	0.0156406	0.0856239	0.001364	1.1913	1.3375	3.2058
1974	0.0140861	0.0771137	0.0012284	1.2973	1.3534	3.3309
1975	0.0129079	0.0706636	0.0011257	1.2734	1.358	3.3274
1976	0.0122046	0.0668138	0.0010644	1.3245	1.338	3.3636
1977	0.0114595	0.0627344	0.0009994	1.3113	1.2752	3.253
1978	0.010651	0.0583083	0.0009289	1.3557	1.3186	3.3554
1979	0.0095654	0.0523651	0.0008342	1.4248	1.2782	3.4002
1980	0.0084277	0.0461372	0.000735	1.4194	1.2471	3.3803
1981	0.0076397	0.0418229	0.0006662	1.4325	1.2095	3.3632
1982	0.0071963	0.0393959	0.0006276	1.3737	1.1402	3.2327
1983	0.0069723	0.0381697	0.0006081	1.3714	1.111	3.231
1984	0.0066838	0.03659	0.0005829	1.3819	1.0714	3.191
1985	0.0064539	0.0353318	0.0005628	1.3237	1.0196	3.1248
1986	0.0063362	0.0346871	0.0005526	1.3638	0.9608	3.1111
1987	0.0061131	0.0334657	0.0005331	1.3628	0.9303	3.0348
1988	0.0058702	0.0321361	0.0005119	1.3363	0.8879	2.9012
1989	0.0056004	0.0306589	0.0004884	1.3108	0.8656	2.7859
1990	0.0053133	0.0290872	0.0004634	1.3214	0.8711	2.7786
1991	0.0144421	0.0362278	0.0043176	1.2173	0.749	2.4558
1992	0.0247486	0.04471	0.0086332	1.2782	0.7536	2.5389
1993	0.0240292	0.0434104	0.0083823	1.1748	0.6934	2.347
1994	0.0234293	0.0423267	0.008173	1.0896	0.6791	2.2432
1995	0.0227836	0.0411602	0.0079478	1.1413	0.6368	2.2298
1996	0.0221302	0.0399797	0.0077198	1.1079	0.6418	2.2411
1997	0.0216338	0.0390829	0.0075467	1.1203	0.6217	2.24
1998	0.021302	0.0384835	0.0074309	1.1032	0.6101	2.1681
1999	0.0208417	0.0376519	0.0072704	1.095	0.6225	2.1814
2000	0.0201639	0.0364275	0.0070339	1.074	0.6363	2.1934
2001	0.019606	0.0354196	0.0068393	1.0817	0.6364	2.1969
2002	0.0193008	0.0348683	0.0067329	1.0737	0.6345	2.1969

California Data

year	wine_gal_eth_per_cap_146	beer_gal_eth_per_cap_1499	spirits_gal_eth_per_cap_1499	gal_eth_per_cap_1499tota
1970	0.6329	1.1354	1.114	2.5235
1971	0.6764	1.1532	1.1243	2.5869
1972	0.6602	1.1658	1.0852	2.5552
1973	0.677	1.2047	1.103	2.6169
1974	0.6802	1.2486	1.1117	2.6682
1975	0.6959	1.264	1.1098	2.6942
1976	0.701	1.2663	1.1007	2.6911
1977	0.6664	1.2925	1.0556	2.6421
1978	0.681	1.325	1.071	2.7058
1979	0.6971	1.3675	1.0608	2.7487
1980	0.7137	1.3775	1.0415	2.7584
1981	0.7211	1.391	1.0227	2.7646
1982	0.7187	1.3848	0.9822	2.7226
1983	0.7486	1.3713	0.9576	2.6902
1984	0.7376	1.3466	0.9357	2.6531
1985	0.7814	1.3292	0.9038	2.6171
1986	0.7865	1.3434	0.8423	2.5779
1987	0.7416	1.3357	0.8232	2.5382
1988	0.677	1.3295	0.7898	2.4797
1989	0.6094	1.3131	0.7721	2.4225
1990	0.586	1.3407	0.7744	2.447
1991	0.4893	1.2894	0.7087	2.2965
1992	0.507	1.2878	0.7083	2.2968
1993	0.4788	1.2649	0.6789	2.2273
1994	0.4744	1.2454	0.6539	2.1812
1995	0.4515	1.2302	0.6302	2.1459
1996	0.4913	1.2271	0.6314	2.158
1997	0.4979	1.2163	0.6232	2.1413
1998	0.4547	1.2206	0.6168	2.14
1999	0.4637	1.2255	0.6293	2.1635
2000	0.4829	1.2232	0.6451	2.1806
2001	0.4788	1.2284	0.6393	2.1807
2002	0.4887	1.2302	0.6459	2.2013

California Data

year	wine_gal_eth_per_cap_1499	trend	policyCA	policyCAtrend	beer_policyCAconsumeUS	beer_policyCAtax	wine_policyCAconsumeUS
1970	0.2739	1	0	0	0	0	0
1971	0.3093	2	0	0	0	0	0
1972	0.3042	3	0	0	0	0	0
1973	0.3091	4	0	0	0	0	0
1974	0.3078	5	0	0	0	0	0
1975	0.3202	6	0	0	0	0	0
1976	0.324	7	0	0	0	0	0
1977	0.2939	8	0	0	0	0	0
1978	0.3097	9	0	0	0	0	0
1979	0.3202	10	0	0	0	0	0
1980	0.3394	11	0.8333333	9.166666	1.147917	0.0070231	0.2828333
1981	0.3508	12	1	12	1.391	0.0076397	0.3508
1982	0.3555	13	1	13	1.3848	0.0071963	0.3555
1983	0.3612	14	1	14	1.3713	0.0069723	0.3612
1984	0.3707	15	1	15	1.3466	0.0066838	0.3707
1985	0.3839	16	1	16	1.3292	0.0064539	0.3839
1986	0.392	17	1	17	1.3434	0.0063362	0.392
1987	0.3793	18	1	18	1.3357	0.0061131	0.3793
1988	0.3603	19	1	19	1.3295	0.0058702	0.3603
1989	0.3372	20	1	20	1.3131	0.0056004	0.3372
1990	0.3319	21	1	21	1.3407	0.0053133	0.3319
1991	0.2983	22	1	22	1.2894	0.0144421	0.2983
1992	0.3007	23	1	23	1.2878	0.0247486	0.3007
1993	0.2834	24	1	24	1.2649	0.0240292	0.2834
1994	0.2818	25	1	25	1.2454	0.0234293	0.2818
1995	0.2854	26	1	26	1.2302	0.0227836	0.2854
1996	0.2994	27	1	27	1.2271	0.0221302	0.2994
1997	0.3017	28	1	28	1.2163	0.0216338	0.3017
1998	0.3026	29	1	29	1.2206	0.021302	0.3026
1999	0.3086	30	1	30	1.2255	0.0208417	0.3086
2000	0.3121	31	1	31	1.2232	0.0201639	0.3121
2001	0.313	32	1	32	1.2284	0.019606	0.313
2002	0.3252	33	1	33	1.2302	0.0193008	0.3252

California Data

year	wine_policyCAtax	spirits_policyCAconsumeUS	spirits_policyCAtax
1970	0	0	0
1971	0	0	0
1972	0	0	0
1973	0	0	0
1974	0	0	0
1975	0	0	0
1976	0	0	0
1977	0	0	0
1978	0	0	0
1979	0	0	0
1980	0.0006125	0.8679166	0.0384476
1981	0.0006662	1.0227	0.0418229
1982	0.0006276	0.9822	0.0393959
1983	0.0006081	0.9576	0.0381697
1984	0.0005829	0.9357	0.03659
1985	0.0005628	0.9038	0.0353318
1986	0.0005526	0.8423	0.0346871
1987	0.0005331	0.8232	0.0334657
1988	0.0005119	0.7898	0.0321361
1989	0.0004884	0.7721	0.0306589
1990	0.0004634	0.7744	0.0290872
1991	0.0043176	0.7087	0.0362278
1992	0.0086332	0.7083	0.04471
1993	0.0083823	0.6789	0.0434104
1994	0.008173	0.6539	0.0423267
1995	0.0079478	0.6302	0.0411602
1996	0.0077198	0.6314	0.0399797
1997	0.0075467	0.6232	0.0390829
1998	0.0074309	0.6168	0.0384835
1999	0.0072704	0.6293	0.0376519
2000	0.0070339	0.6451	0.0364275
2001	0.0068393	0.6393	0.0354196
2002	0.0067329	0.6459	0.0348683

California Data

Variable	Description
year	Calendar year
beer_wtdtaxoz6	Real California beer tax per ethanol ounce
spirits_wtdtaxoz6	Real California spirits tax per ethanol ounce
wine_wtdtaxoz6	Real California wine tax per ethanol ounce
beer_gal_eth_per_cap_146	California per capita (age 14 and above) consumption of ethanol from beer
spirits_gal_eth_per_cap_146	California per capita (age 14 and above) consumption of ethanol from spirits
gal_eth_per_cap_146tota	California per capita (age 14 and above) consumption of ethanol
wine_gal_eth_per_cap_146	California per capita (age 14 and above) consumption of ethanol from wine
beer_gal_eth_per_cap_1499	U.S. per capita (age 14 and above) consumption of ethanol from beer
spirits_gal_eth_per_cap_1499	U.S. per capita (age 14 and above) consumption of ethanol from spirits
gal_eth_per_cap_1499tota	U.S. per capita (age 14 and above) consumption of ethanol
wine_gal_eth_per_cap_1499	U.S. per capita (age 14 and above) consumption of ethanol from wine
trend	Variable is 1 in 1970 and increases by 1 in each subsequent year.
policyCA	Variable is 0 in 1970-1979, 10/12 in 1980, and 1 in 1981-2002
policyCAtrend	Variable is product of policyCA and trend
beer_policyCAconsumeUS	Variable is product of policyCA and beer_gal_eth_per_cap_1499
beer_policyCAtax	Variable is product of policyCA and beer_wtdtaxoz6
wine_policyCAconsumeUS	Variable is product of policyCA and wine_gal_eth_per_cap_1499
wine_policyCAtax	Variable is product of policyCA and wine_wtdtaxoz6
spirits_policyCAconsumeUS	Variable is product of policyCA and spirits_gal_eth_per_cap_1499
spirits_policyCAtax	Variable is product of policyCA and spirits_wtdtaxoz6